



Appl. No. 10/045,346

APP 1459

APPENDIX

Marked-up version of amendment to specification

Page 1, delete the paragraph starting at line 6 and insert the following:

-- This application is a continuation of Serial No. 09/223,466, filed December 30, 1998, now abandoned. It is also related to Agrawal [.] et al patents 6,208,864, March 27, 2001 and 6,216,005, April 20, 2001 [and 6,282,274, August 28, 2001]. --



@ Bell Communications Research



Exhibit I

Date: August 10, 1998

From: Nim K. Cheung
21710/MCC 1C-105G
973-829-4078

Subject: Patent Disclosures

**"Forwarding Ongoing Calls Between Fixed
and Cellular Networks of the Same Service Provider"**
and
"A Cellular-Fixed Call Transfer Service from Cellular Network"

Joseph D'Avanzo
MCC 1A-138R

Joe,

Attached is the write-up for two patent disclosures entitled "Forwarding Ongoing Calls Between Fixed and Cellular Networks of the Same Service Provider" and "A Cellular Fixed Call Transfer Service form Cellular Network" co-authored by Prathima Agrawal and Parameswaran Ramanathan.

Please enter these disclosures into your database for further processing.

Nim K. Cheung

Nim K. Cheung
Lab 217 Patent Coordinator

Attachments

Copy to: Prathima Agrawal

RECEIVED

FEB 10 2003

Technology Center 2600

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Exhibit II

A Cellular-Fixed Call Transfer Service from Cellular Network Provider

P. Agrawal P.Ramanathan

Internet Architecture Research Laboratory

Bellcore

Morristown, N.J.

August 7, 1998

1 Introduction

Most people in the near future will have at least two telephone numbers through which they make or receive calls on a regular basis. One of these telephone numbers is usually on a fixed network while the other is on a cellular network. Let us respectively refer to these two numbers for a user as his/her *fixed telephone number* (FTN) and *cellular telephone number* (CTN).

The calls made from the FTN are usually of lower cost than those made or received using the CTN because the call is routed over the fixed network and therefore does not make use of the limited wireless bandwidth. However, once a call has been initiated on the FTN, the user has very little mobility; a cordless phone may allow the user to move 50-100 meters from the base of the phone without significant deterioration in the voice quality. However, a user can move in a wide geographical area while continuing a call on the CTN. In this patent disclosure, we describe a new call transfer service which can be offered by

the Cellular Network Provider to allow users to transfer ongoing calls between the his/her FTN and CTN.

The described service benefits both the user and the service provider. The user benefits because he/she can use the lower cost calls through the FTN whenever possible without sacrificing mobility. The service provider also benefits because as users switch over to FTN from CTN whenever possible, the limited capacity of the cellular network can support other users. More customers will also be attracted to this lower cost service with full support for mobility. Also, when a user transfers a call from his/her FTN to a CTN the cellular network provider gains additional business.

Prior art does not allow transfer of ongoing calls from a fixed network to a cellular network and vice versa. Some service providers offer forwarding of calls from fixed to cellular network are possible prior to the establishment of a call. Similarly, some fixed network service providers offer transfer of ongoing calls from one fixed telephone number to another.

Example 1 Suppose that a user receives a call at home on the FTN just as he/she is about to leave for work. At present, the user has only one of the following two options. Either complete the call before starting the commute to work or terminate the conversation and restart it using the cellular phone. Terminating the conversation and restarting it using the cellular phone requires all parties in the call to hangup and reestablish the necessary connections. This is clearly troublesome. However, if the user can transfer the call over to the CTN without disrupting the conversation, then the call can be continued while the user is in commute.

In this example, the user benefits because he/she gets mobility while using the lower cost FTN as long as possible. The cellular network provider also benefits because a call has been transferred to it from another service provider.

Example 2 Suppose that a user makes using his/her CTN while away from home and

comes back home while the call is in progress. There will be no degradation in the voice quality and the user can continue using the more expensive cellular network. However, if the user can transfer the call to his/her FTN, the cost of the rest of call will be lower. The service provider will also benefit because as users switch over to FTN from CTN, the limited capacity of the cellular network can be used to support other users.

In this example, the reason for the transfer capability is cost.

2 Operation

An user who wants to subscribe to this service must purchase a box called HomeBase (HB) from his/her cellular network provider and connect it to the fixed phone. The HomeBase has hardware interfaces to communicate with the wired and the wireless networks as well as the fixed phone and the cellular phone. In addition, the HB also has the client side of an intelligent agent, called *Fixed Cellular Mobility Agent* (FCMA) which has the primary responsibility for transferring the calls between the fixed and the cellular phone. The server side of the intelligent agent run on the Mobile Switching Centers (MSCs) of the associated cellular network. The client FCMA at a HB interacts with the server FCMA at the nearest MSC.

Figure 1 shows the architecture of the telephone network with a HB at a user's home.

2.1 Setup

The user buys the HB and connects to the fixed phone. The user also gets a new telephone number for his/her fixed phone from the cellular service provider. This new telephone number is such that all calls to this number are forwarded to the Mobile Switching Center closest to the user's home by the PSTN. One of the keys in the cellular handset is designated as "Transfer" key. That is, the user must press this key to indicate that the call must be transferred.

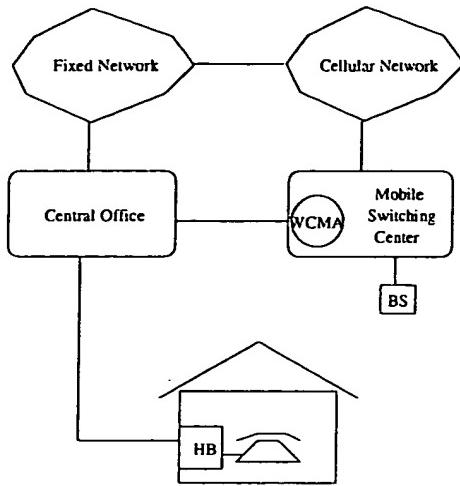


Figure 1: Architecture of the telephone network showing the HomeBase.

Basically, when the user presses the Transfer key the following actions take place.

1. If the call currently in progress is on the fixed phone,
 - (a) HB tries to contact the cellular phone
 - (b) If the cellular phone is reachable from the HB, then the call is transferred to the cellular handset through the cellular network.
 - (c) If the cellular phone is not reachable from the HB, an error is indicated and the call is not transferred.
2. If the call currently in progress is on the cellular phone,
3. HB transfers the call to the fixed phone.

2.2 Incoming call to the user's fixed telephone

Because of the new telephone number assigned to the user for his/her fixed phone, all incoming calls are routed by the PSTN are routed to the FCMA running at the MSC closest to the user's home. The FCMA forwards the call to the HB through the traditional PSTN using the telephone number assigned by the user's local service provider.

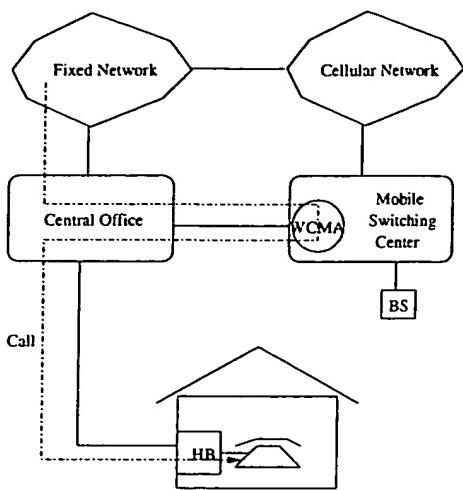


Figure 2: Routing of incoming calls to user's fixed phone.

Figure 2 shows a typical route of a call to the fixed telephone of the user. Observe that, the call is routed from the central office to the FCMA and then from FCMA to user's fixed phone through the user's HB.

2.3 Outgoing call from the user's FTN

All calls from the user's FTN are first routed by HB to the FCMA running at the nearest MSC. The FCMA forwards the call to the PSTN as in a traditional cellular network. Figure 3(a), shows a typical route of a call from a FTN. Figure 3(a) shows a typical route of a call from the FTN of a user who has subscribed to the transfer service.

2.4 Incoming call to the user's CTN

In this case, the call is routed to the user's CTN just as in the traditional cellular network.

2.5 Outgoing call from the user's CTN

In this case, the call is routed from the user's CTN just as in the traditional cellular network.

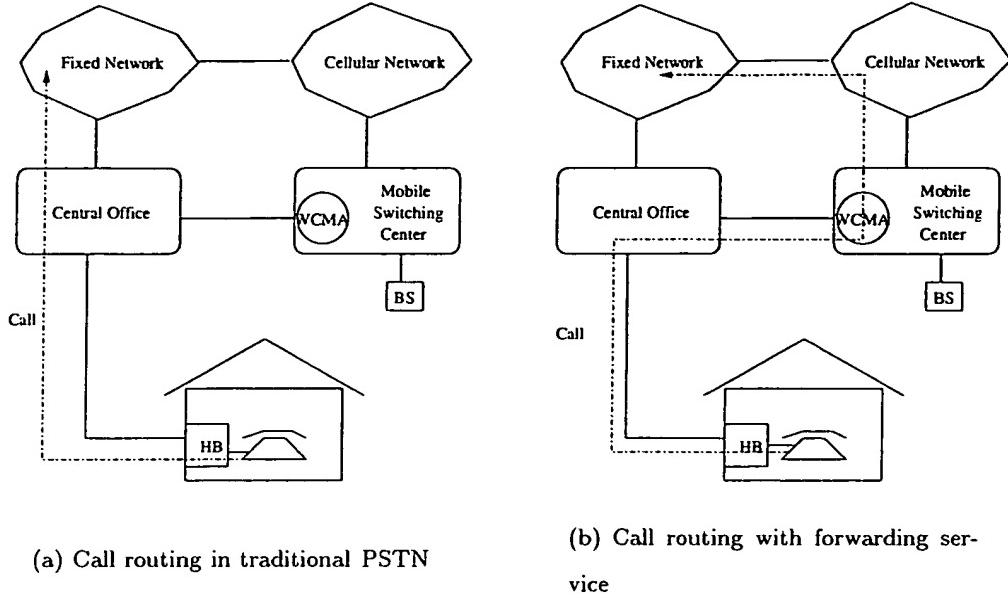


Figure 3: Routing of outgoing calls from FTN without and with the forwarding service.

2.6 Transfer of an ongoing call from FTN to CTN

Consider a user who has subscribed to the transfer service. Now suppose that a call has been established to the user's FTN using the procedure described above. Further suppose that the user wants to transfer and continue the call from the cellular phone. The user indicates this intention by pressing the Transfer key in the keypad of the fixed phone. The HB immediately contacts the FCMA at the nearby Mobile Switching Center (MSC) and requests a handover of the call from the HB to a base station in the cellular network. The call is then handed over to a base station in the cellular network using the handoff procedures in the cellular network. The only difference is that the handover is from a HB to a base station. Once the handover is complete, the user's cellular phone communicates directly with the base station instead of HB. Just prior to the final handover, the user gets a confirmation of the successful transfer on his/her fixed phone. The user can then continue the conversation using the cellular phone. The call is now handled by the cellular network as a routine call. For instance, if the user moves from the home cell to another cell, the call will be handed off to appropriate MSCs and base stations as in the cellular network.

2.7 Transfer of an ongoing call from CTN to FTN

Consider a user who has subscribed to the transfer service. Now suppose that a call has been established to the user's CTN using procedures as in a cellular network. Therefore, the user's cellular phone is communicating directly with a base station in the cellular network.

Now suppose that the user moves into his/her home and would like to switch to the fixed phone. As indicated earlier, the advantage to the user is lower cost because calls over the fixed network do not use the limited bandwidth of the cellular network and thus, they are traditionally lower in cost.

The user indicates his/her intention to switch to the FTN by pressing the Transfer key in the keypad of the cellular phone. The MSC immediately contacts the user's HB and initiates a handoff from the base station to the HB. Once the handoff is complete the call is routed from the cellular phone to the HB to MSC through the local loop. The user gets a confirmation of the successful transfer. The user can then continue the conversation using the fixed phone.



Exhibit 111

Joseph A. D'Avanzo
Intellectual Property Manager

MCC 1A-138R
445 South Street
Morristown, New Jersey 07960-6438
Tel: (973) 829-2368
Fax: (973) 829-2366
Email: jdavanzo@notes.cc.bellcore.com

August 21, 1998

Mr. John T. Peoples
Attorney
14 Blue Jay Court
Warren, NJ 07059

RECEIVED

FEB 10 2003

Technology Center 2600

Re: Request for Cost Estimate
Patentability Job
For: A CELLULAR-FIXED CALL TRANSFER SERVICE FROM CELLULAR NETWORK
Inventors: Agrawal-Ramanathan
My Reference: Job 3037

Dear John:

Please review the attached invention disclosure and provide me with a cost estimate for preparing a utility application based upon the disclosure. Also, include an estimated target date for completing the work. Forward your cost estimate to my attention by September 4, 1998, referencing the above mentioned Job No. Our timeframe for filing the utility application is October 30, 1998.

Sincerely,

Joseph A. D'Avanzo
Intellectual Property Manager

Atts. (1)

Copy (w/o Atts.) to:
J. Giordano

Exhibit IV

John T. Peoples, Ph.D.

Registered Patent Attorney
14 Blue Jay Court
Warren, NJ 07059

Office: (908) 580-9816
Fax: (908) 580-9817

December 16, 1998

Joseph D'Avanzo
Legal - Intellectual Property Manager
Bellcore, MCC 1A-138R
445 South Street
Morristown, New Jersey 07960-6438

Re: Patent Applications from Jobs 3037 and 3038
Inventors: Agrawal and Ramanathan

Dear Joe,

Enclosed you will find:

- (a) eight (8) completed patent applications based upon the above-identified jobs, including hand-drawn Figures;
- (b) three (3) WORD diskettes containing the patent application files (*agrawall-1*, *agrawall-2* on the first diskette; *agrawall-3*, *agrawall-4* on the second diskette; and *agrawall2-1*, *agrawall2-2*, *agrawall2-3*, *agrawall2-4* on the third diskette);
- (c) two (2) references (E. Farag et al; D. Goodman) to be cited in the Information Disclosure Statement as general background; and
- (d) my invoice in preparing the patent application, in the amount authorized by you in our phone conversation of December 7, 1998 and your confirming e-mail of December 11, 1998.

Also, once Serial Nos. have been assigned to the applications, it is my recommendation that the specifications be amended to cross-reference the companion applications.

Respectfully,



John T. Peoples

Enc.:

As stated

Exhibit ✓

12/17/98

VAL:

Attached Are:

- ① 4 Patent Applications related to Job 3037
- ② 4 Patent Applications related to Job 3038

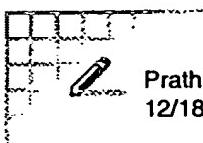
First Priority

- ① Prepare Declaration and Assignments for inventors signatures
- ② Set-up an appointment with the inventors to come to legal to sign the Dec and Assignments

See John People's Cover letter for further details.

Thanks,
Jill

Exhibit 1 VIA



Prathima Agrawal
12/18/98 09:24 AM

To: Valerie Harris/Bellcore@Bellcore
cc: pagrawal@bellcore.com
Subject: Patent Applications

Valerie,

I thought there are 8 patent applications being filed. Your mail says 4.
Anywhay, here is the info you requested.

Prathima

----- Forwarded by Prathima Agrawal/Bellcore on 12/18/98 09:24 AM -----
~~Valerie Harris~~ 12/17/98 05:52 PM

To: Prathima Agrawal/Bellcore@Bellcore, Paramesawaran Ramanathan/Bellcore@Bellcore
cc:
Subject: Patent Applications



We are in the process of filing papers with the United States Patent and Trademark Office for four (4) applications which you are inventors. I need to obtain the following information from you as soon as possible in order to complete the paperwork.

Full Name Prathima Agrawal
Street Address (home) 40 Colchester Road
State Name New Jersey
City Name New Providence
County Name Union
Zip Code 07974
P O Address (if any)
Citizenship USA

After I have prepared these papers, I will forward them to you for your signatures. Please respond with this information via E-Mail so that I can update our database. I need to file these papers within the next few days, so a quick response would be very helpful. Thank you.

Valerie Harris
973-829-2362



Parmesh <parmesh@euclid.ece.wisc.edu> on 12/22/98 11:11:30 AM

Please respond to parmesh@euclid.ece.wisc.edu

To: Valerie Harris/Bellcore
cc:
Subject: Re: Patent Applications

On Tue, Dec 22, 1998 at 10:11:09AM -0500, vharris@notes.cc.bellcore.com wrote:

>
>
> We are in the process of filing papers with the United States Patent and
> Trademark Office for eight (8) applications which you are an inventor. I
> need to obtain the following information from you as soon as possible in
> order to complete the paperwork.
>
> Full Name
> Street Address (home)
> State Name
> City Name
> County Name
> Zip Code
> P O Address (if any)
> Citizenship
>
> After I have prepared these papers, I will forward them to you for your
> signature. Please respond with this information via E-Mail so that I can
> update our database. I need to file these papers within the next few days,
> so a quick response would be very helpful. Thank you.
>
>
>
> Valerie Harris
> 973-829-2362
>
>
Parameswaran Ramanathan

Home Address:
6 Ramsgate Circle
Madison, Wisconsin, 53717-1043.
County: dane

Citizenship:
India

Permanent Resident of USA

-- Parmesh

--
Associate Professor parmesh@ece.wisc.edu
Dept. of Electrical & Computer Engineering Tel: (608) 263-0557
University of Wisconsin, Madison Fax: (608) 265-4623
Madison, WI 53706-1691 http://www.ece.wisc.edu/~parmesh



Shipment Airwaybill
Non negotiable
1-800-CALL-L

In USA only

1 Front (Shipper)

Account no. 758366874	Shipper's reference 45
Company name Bellcore	
Shipper's Name Valerie Harris	
Address 445 South Street Room 1G-112R Morristown NJ United States Of America	
Zip/Postcode (required) 07960	Phone/Fax/Telex (circle one) (973) 829-2362 Ext.

2 To (Recipient)

Company name	
Attention Mr. Parameswaran Ramamathan	
Delivery address DHL cannot deliver to a PO Box 6 Ramsgate Circle Madison WI United States Of America	
Zip/Postcode (required) 537171043	Phone/Fax/Telex (circle one) Ext.

5 Shipper's authorization and signature

We agree that DHL's standard terms apply to this shipment and limit DHL's liability for loss or damage to US\$100. The Hague Convention may also apply. We authorize DHL to complete other documents necessary to export this shipment. We understand that insurance is available on request, for an extra charge. We agree to pay all charges if the recipient or third party does not pay.

We understand that DHL DOES NOT TRANSPORT CASH.

Signature
Valerie Harris

Date
12/23/98

This is a summary of our main terms and conditions. Our full terms and conditions are on display and available from DHL Service Centers and in our Worldwide Express Guide.

About our Terms and Conditions

1. DHL's Contract with you:

These terms and conditions, along with those set out in our Worldwide Express Guide, are all the terms of the contract between you, the sender of the shipment, and us, DHL. When you tender a shipment to us, you accept our terms for you, the sender and for anyone else who has an expressed interest in the shipment. Our terms and conditions also protect anyone who we may contract to collect, transport or deliver your shipment. No employee of DHL or anyone else has the authority to change any of our terms or conditions, or make any promises on our behalf. The terms and conditions of this airbill shall govern in the event of any inconsistencies that might exist in any other transportation documents accompanying this shipment.

2. What shipment means:

A shipment means all documents or parcels that travel under one airway bill, not just any single document or envelope included in a shipment. You certify that the shipment details are complete and accurate. You agree that all shipments may be carried by any means, including air, road or any other carrier unless you give us specific instructions to the contrary.

3. International Shipments:

You appoint DHL as your agent to conduct Customs entry and clearance and certify DHL as your consignee solely for the purpose of designating DHL as your Customs Broker to perform Customs entry and clearance.

4. Shipments we do not accept:

We do not accept as a shipment anything that is considered a restricted article or hazardous material by the Department of Transportation (DOT), International Air Transport Association (IATA), or the International Civil Aviation Organization (ICAO).

We do not accept any shipments that contain items that we cannot transport legally or safely, including, but not limited to:

Animals	Perishables
Currency	Precious Metals
Liquor	Precious Stones
Plants	Negotiable Items in Bearer Form

For full information about shipments we cannot accept for shipping, please contact your nearest DHL Service Center.

DHL Connect

992756325

As shipment number in an inquiry

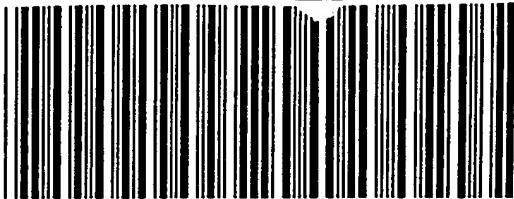


EXHIBIT A
ORIGIN: MMU DESTINATION: MSN

4 Pcs/Weight/Size

No. of pieces

1

Weight if DHL Express Document packaging is used, enter X0

0.5

Dimensions in inches

length width height

DIMENSIONAL/CHARGED WEIGHT

1

CODES

CHARGES

Services

- U.S. DOMESTIC
 INTERNATIONAL DOCUMENT
 INTERNATIONAL NON DOCUMENT

Payment Options not all options available to all countries

- Shipper's Account
 Recipient Third Party
Acct. No. _____

SATD

Special Services extra charges may apply

AIR MAIL DELIVERY

- POD
Shipper's tax/telex no. for POD (optional)

OTHER _____ specify

Full description of contents

Letter & Documents

International non document shipments only

Attach original and three copies of a Commercial Invoice

Declared value for customs (In US\$). Export license no./Symbol if applicable

Harmonized Sched. B no. if applicable. Type of export
 Permanent
 Temporary Repair/Return

Shipper's EIN/SSN These commodities, technology or software were exported from the United States in accordance with the export administration regulations. Diversions contrary to U.S. law prohibited.

Destination duties/taxes if left blank recipient pays duties/taxes

Recipient Shipper

DHL Airways, Inc. (c) 333 Twin Dolphin Drive, Redwood City, CA 94065

5. Claims:

If you wish to submit a claim for a lost (includes misdelivered) or damaged shipment, the shipper must:

- * Submit the claim in writing.
- * Your claim must be received within 30 days from the date that we accept your shipment.
- * Send or take your claim to your nearest DHL office.

Please note: We will not review a claim until all shipping and any other related charges owed have been paid to DHL.

We are not liable for

6. Delayed Shipments:

We will make every effort to deliver your shipment according to our regular delivery schedules. DHL is not liable for any delays, even if they are our fault in:

- * Picking up a shipment
- * Transporting a shipment (including delays caused by diversions)
- * Delivering a shipment

DHL reserves the right, without admitting liability, to refund transportation/shipping charges, but is not obligated to do so.

7. Circumstances beyond our control:

We are not liable if a shipment is lost (includes misdelivered) or damaged because of circumstances beyond our control. These circumstances include:

- * An "Act of God", for example an earthquake, cyclone, storm or flood
- * Force Majeure* for example war, plane crash or embargo
- * Any defect or characteristic to do with the nature of the shipment, even if known to us when we accepted it
- * Any action or omission by anyone outside DHL. For example:
 - The sender of the shipment
 - The receiver
 - An interested third party
 - Customs or government officials
 - The postal service, another carrier or a third party who we contract to deliver to destinations that we do not serve directly.
- * We are not liable even if the sender did not ask for or know about a third party delivery agreement.

We are also not liable for electrical or magnetic damage to, or erasure of, electronic or photographic images or recordings.

8. Consequential Damages:

We are not liable for the following, whether they arise in contract or any other form of civil action, including negligence, and even if: are DHL's fault:

- * Consequential or special damages or loss
- * Other indirect loss * Breach of other contracts
- Consequential damages or loss include, but are not limited to: Income * Profits * Interest * Markets * Use of contents

We are liable for

9. Extent of our liability:

Our liability for a lost or damaged shipment is limited to the low of these 3 amounts:

- * US \$100, or
- * The actual amount of the loss or damage , or
- * The actual value of the document or parcel. This does not include any commercial utility or special value to the shipper or any other person.

10. What "Actual value" means:

The lowest of the following amounts, determined as at the time place we accepted the shipment:

Documents (meaning any shipment without commercial value)
*The cost of replacing, reconstructing or reconstituting the docu

Parcels (meaning any shipment with commercial value):
*The cost of repairing or replacing the parcel, or
*The resale or fair market value of the parcel
The actual value of a parcel cannot be more than the original ci you plus 10 percent.

Warsaw Convention:

11. If the transportation of a shipment involves an ultimate dest or stop in a country other than the country of departure, the Wa Convention limits our liability for loss or damage to such shipment. You agree that your shipment may be carried via intermediate shipping places which we deem appropriate.

Shipment Insurance:

12. We recommend that you insure your shipment with DHL. V can arrange insurance for you up to US \$ 5 million. Please note our shipment insurance does not cover consequential damage: loss or damage caused by transportation delays. If you do not have Shipment Insurance on the front of this airway bill, you assume risks of loss or damage.

PACKAGE (Recipient's) COPY



Exhibit VIII B

Shipment Receipt

Shipment From

Bellcore
Valerie Harris
445 South Street
Room 1G-112R

Morristown NJ 07960
United States Of America
(973) 829-2362

Shipment To

Mr. Parameswaran Ramamathan
6 Ramsgate Circle

Madison WI 537171043
United States Of America

Shipment Details

Date of Shipment : 12/23/98
Airwaybill Number : 9292756325
Service Type : Document
Packaging Type : Your Own Packaging
Number of Pieces : 1
Total Weight : 0.5 lbs
Insured Amount : \$0.00
Estimated Charge : \$0.00

International Information

Declared Value : \$0.00
Duties and Taxes : Paid by Recipient
Deliver Duty Paid? : No

Billing Information

Payment Type : Shipper Account
Billed Account : 758366874
Expiration Date : N/A

Special Services

Saturday Delivery : Yes
Signature POD : No

Reference Information

Reference : 45

Description of Contents

Letter & Documents